Claims

1. An integrated occupant and crash sensing control unit for a motor vehicle, comprising:

a first processor;

a pressure sensor interface coupled between the first processor and a pressure sensor, wherein the pressure sensor provides a pressure signal to the first processor, the pressure signal providing an indication of a weight of an occupant of a seat of a motor vehicle;

a safety belt tension sensor interface coupled between the first processor and a safety belt tension sensor, wherein the belt tension sensor provides a tension signal to the first processor, the tension signal providing an indication of a tension within a safety belt associated with the seat; and

a dual axis accelerometer coupled to the first processor, wherein the accelerometer provides a lateral deceleration signal and a longitudinal deceleration signal to the first processor, the lateral and longitudinal deceleration signals providing an indication of the lateral and longitudinal deceleration, respectively, of the motor vehicle, and wherein the first processor provides an activation signal to a restraint device responsive to the pressure signal, the tension signal and the lateral and longitudinal deceleration signals.

2. The control unit of claim 1, further including:

a remote crash sensor interface coupled between the first processor and a remote crash sensor, wherein the remote crash sensor provides a crash signal to the first processor, the crash signal indicating whether the motor vehicle has experienced a collision, and wherein the first processor provides an activation signal to the restraint device responsive to the pressure signal, the tension signal, the lateral and longitudinal deceleration signals and the crash signal.

3. The control unit of claim 1, further including:

a second processor coupled to the dual axis accelerometer, the second processor providing an override signal that prevents the activation signal from activating the restraint device when the second processor determines that the lateral and longitudinal deceleration signals indicate that deployment of the restraint device is not warranted.

4. The control unit of claim 2, further including:

a second processor coupled to the dual axis accelerometer and the remote crash sensor interface, the second processor providing an override signal that prevents the activation signal from activating the restraint device when the lateral and longitudinal deceleration signals and the crash signal indicate that deployment of the restraint device is not warranted.

5. The control unit of claim 1, further including:

a rollover sensor coupled to the first processor, the rollover sensor including an angular rate sensor and a vertical accelerometer for measuring an angular acceleration and a vertical acceleration, respectively, of the motor vehicle, wherein the first processor also provides the activation signal responsive to the angular and vertical accelerations of the motor vehicle.

6. The control unit of claim 3, further including:

a rollover sensor coupled to the first and second processors, the rollover sensor including an angular rate sensor and a vertical accelerometer for measuring an angular acceleration and a vertical acceleration, respectively, of the motor vehicle, wherein the first processor also provides the activation signal responsive to the angular and vertical accelerations of the motor vehicle, and wherein the second processor also provides the override signal responsive to the angular and vertical accelerations of the motor vehicle.

7. The control unit of claim 1, wherein the restraint device is an airbag.

8. An integrated occupant and crash sensing control unit for a motor vehicle, comprising:

a first processor;

a pressure sensor interface coupled between the first processor and a pressure sensor, wherein the pressure sensor provides a pressure signal to the first processor, the pressure signal providing an indication of a weight of an occupant of a seat of a motor vehicle;

a safety belt tension sensor interface coupled between the first processor and a safety belt tension sensor, wherein the belt tension sensor provides a tension signal to the first processor, the tension signal providing an indication of a tension within a safety belt associated with the seat; and

a dual axis accelerometer coupled to the first processor, wherein the accelerometer provides a lateral deceleration signal and a longitudinal deceleration signal to the first processor, the lateral and longitudinal deceleration signals providing an indication of the lateral and longitudinal deceleration, respectively, of the motor vehicle, and wherein the first processor provides an activation signal to an airbag responsive to the pressure signal, the tension signal and the lateral and longitudinal deceleration signals.

9. The control unit of claim 8, further including:

a remote crash sensor interface coupled between the first processor and a remote crash sensor, wherein the remote crash sensor provides a crash signal to the first processor, the crash signal indicating whether the motor vehicle has experienced a collision, and wherein the first processor provides an activation signal to the airbag responsive to the pressure signal, the tension signal, the lateral and longitudinal deceleration signals and the crash signal.

10. The control unit of claim 8, further including:

a second processor coupled to the dual axis accelerometer, the second processor providing an override signal that prevents the activation signal from activating the airbag when second processor determines that the lateral and longitudinal deceleration signals indicate that deployment of the airbag is not warranted.

11. The control unit of claim 9, further including:

a second processor coupled to the dual axis accelerometer and the remote crash sensor interface, the second processor providing an override signal that prevents the activation signal from activating the airbag when the lateral and longitudinal deceleration signals and the crash signal indicate that deployment of the airbag is not warranted.

12. The control unit of claim 8, further including:

a rollover sensor coupled to the first processor, the rollover sensor including an angular rate sensor and a vertical accelerometer for measuring an angular acceleration and a vertical acceleration, respectively, of the motor vehicle, wherein the first processor also provides the activation signal responsive to the angular and vertical accelerations of the motor vehicle.

13. The control unit of claim 10, further including:

a rollover sensor coupled to the first and second processors, the rollover sensor including an angular rate sensor and a vertical accelerometer for measuring an angular acceleration and a vertical acceleration, respectively, of the motor vehicle, wherein the first processor also provides the activation signal responsive to the angular and vertical accelerations of the motor vehicle, and wherein the second processor also provides the override signal responsive to the angular and vertical accelerations of the motor vehicle.

14. An integrated occupant and crash sensing control unit for a motor vehicle, comprising:

a first processor;

a pressure sensor interface coupled between the first processor and a pressure sensor, wherein the pressure sensor provides a pressure signal to the first processor, the pressure signal providing an indication of a weight of an occupant of a seat of a motor vehicle;

a safety belt tension sensor interface coupled between the first processor and a safety belt tension sensor, wherein the belt tension sensor provides a tension signal to the first processor, the tension signal providing an indication of a tension within a safety belt associated with the seat;

a dual axis accelerometer coupled to the first processor, wherein the accelerometer provides a lateral deceleration signal and a longitudinal deceleration signal to the first processor, the lateral and longitudinal deceleration signals providing an indication of the lateral and longitudinal deceleration, respectively, of the motor vehicle, and wherein the first processor provides an activation signal to a restraint device responsive to the pressure signal, the tension signal and the lateral and longitudinal deceleration signals; and

an energy reserve circuit coupled to the first processor, the pressure sensor interface, the belt tension sensor interface and the dual axis accelerometer, wherein the energy reserve circuit provides power to the first processor, the pressure sensor interface, the belt tension sensor interface and the dual axis accelerometer for a limited period of time following a collision.

15. The control unit of claim 14, further including:

a remote crash sensor interface coupled between the first processor and a remote crash sensor, wherein the remote crash sensor provides a crash signal to the first processor, the crash signal indicating whether the motor vehicle has experienced a collision, and wherein the first

processor provides an activation signal to the restraint device responsive to the pressure signal, the tension signal, the lateral and longitudinal deceleration signals and the crash signal.

16. The control unit of claim 14, further including:

a second processor coupled to the dual axis accelerometer, the second processor providing an override signal that prevents the activation signal from activating the restraint device when second processor determines that the lateral and longitudinal deceleration signals indicate that deployment of the restraint device is not warranted.

17. The control unit of claim 15, further including:

a second processor coupled to the dual axis accelerometer and the remote crash sensor interface, the second processor providing an override signal that prevents the activation signal from activating the restraint device when the lateral and longitudinal deceleration signals and the crash signal indicate that deployment of the restraint device is not warranted.

18. The control unit of claim 14, further including:

a rollover sensor coupled to the first processor, the rollover sensor including an angular rate sensor and a vertical accelerometer for measuring an angular acceleration and a vertical acceleration, respectively, of the motor vehicle, wherein the first processor also provides the activation signal responsive to the angular and vertical accelerations of the motor vehicle.

19. The control unit of claim 16, further including:

a rollover sensor coupled to the first and second processors, the rollover sensor including an angular rate sensor and a vertical accelerometer for measuring an angular acceleration and a vertical acceleration, respectively, of the motor vehicle, wherein the first processor also provides the activation

signal responsive to the angular and vertical accelerations of the motor vehicle, and wherein the second processor also provides the override signal responsive to the angular and vertical accelerations of the motor vehicle.

20. The control unit of claim 14, wherein the restraint device is an airbag.